REMARKS

Claims 1, 3-6, and 8-20 are currently pending in the application. Claims 2 and 7 have been cancelled and claims 1, 3, 8, 11, 14, 15, 17 and 20 amended (claims 3, 8, 14, 15, and 17 amended solely to recite correct dependency).

The claims as amended recite a secondary electrical load power management system for an aircraft that includes multiple secondary electrical loads, an aircraft flight condition sensor, and a controller. The controller determines engine secondary power extraction and the current operating conditions of the aircraft. An engine secondary power extraction limit is determined in response to the current operating conditions. The secondary electrical loads are operated in response to the engine secondary power extraction limit and the engine secondary power extraction in accordance with a previously determined priority pattern. Claims 11 and 20 recite methods of controlling electrical load power consumption during operation of an aircraft and include similar limitations as above stated. No new matter is introduced; see for example original claims 2 and 7, paragraphs 0021, 0023, 0029 and 0031-32 and Figs. 2 and 3.

The claimed invention allows an aircraft to be designed to include direct power secondary electrical loads that have a combined rated total power consumption level that is greater than that of rated maximum secondary power extraction of an aircraft engine. Thus, the claimed invention allows an engine to supply an increased amount of electrical power and satisfy electrical power consumption requirements for an increased number of secondary electrical loads during certain operating conditions.

The Examiner has rejected claims 1-20 (35 U.S.C. 103(a)) as unpatentable over Soucy and (sic) Lacy. It is his position that Soucy teaches a power management system

for an aircraft and namely a plurality of secondary loads (direct – generator, indirect – load, Fig. 1), at least one flight condition sensor (engine speed sensor), and a controller (fuel supply controller and governor) coupled to the plurality of loads and the sensor. However, the Examiner acknowledges that Soucy does not explicitly teach how the controller will control the system to work efficiently. Lacy is relied on to cure this omission and is relied on as teaching a system with a controller and primary (uncontrolled residential) and secondary (controlled residential) loads. The Examiner states that Lacy teaches a controller that can determine the secondary power extraction, current operating conditions and secondary power extraction limit and can operate the plurality of secondary loads in response to the secondary power extraction and limits. (Abstract, lines 7-12). The Examiner states that the controller, while determining current operating conditions determines the primary power extraction (power output to uncontrolled residential loads). Lacy is further relied on as teaching the controller operating the secondary loads in priority (col. 5, lines 56-64) and as also teaching the controller limiting the operation the secondary loads when the power extraction is greater than the limit (Col. 4, lines 1-14). (Col. 2., lines 59-67; Col. 3.lines 28-36; col. 4, lines 32-44). The Examiner based on this analysis concludes that it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate Lacy's method of power distribution into Soucy's invention so that the engine can supply power to as many loads as possible in the safest possible way, and to make sure that the engine never exceeds its output capability which may lead to malfunction.

Lacy's patent entitled "Residential Load Shedding" discloses a residential electrical system for controlling the electrical supply to residential homes. The residential

system includes a fuel cell system that supplies electricity to residential homes having controlled loads and uncontrolled loads. The controlled loads refer to appliances that can be disconnected via a load sense and switch circuit, and uncontrolled loads refer to appliances that can only be disconnected via circuit breakers in a house. The electrical system regulates the electrical connections of the load sense and switch circuits to prevent the residential electrical loads from exceeding a power threshold. The control circuit of Lacy monitors the output power of the fuel cell system to all of the residential loads including the controlled and uncontrolled loads. Based on that output power, the control circuit regulates the controlled loads.

The system of Lacy does not make any distinction between which loads are of primary or higher importance. Lacy simply controls the loads that can be regulated via the load sense and switch circuits (controlled loads). Although Lacy discloses determining the power demand from specific controlled loads, this information is used to determine priority of which controlled load is to be deactivated. The loads that demand more power are deactivated first. Lacy does not determine the combined power demand of the controlled loads nor is a power limit set on the controlled loads as a group. Clearly Lacy's residential system is completely unrelated and operates in a substantially different manner than the system and methods claimed.

Lacy's priority scheme involves two separate and distinct circuits.

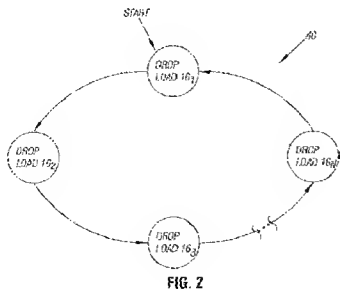

FIG. 2

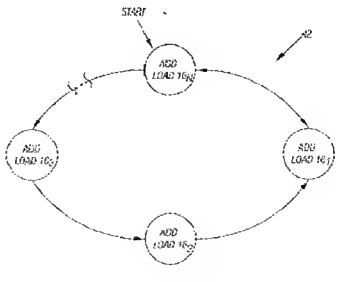

FIG. 3

Figure 2 is a priority scheme for shedding loads off a residential electrical system, i.e., disconnecting the controlled residential loads to bring the output power within the specified ranges while Figure 3 shows a circuit for connecting the controlled residential loads to the electrical system, the connection priority scheme 42 may be an entirely different priority order 40 of Figure 2 (see col. 5, lines 56-66).

The system of Lacy is entirely unsuited for use in an aircraft, for example, of Soucy and even if implemented as suggested by the Examiner, would not result in the instant invention.

It is the applicant's position that the Examiner erred in reciting that Soucy "teaches plurality of secondary loads (direct – generator, indirect – load, Fig. 1)…" (line 3, section 4 of the office action) to allege the teaching of "secondary electrical loads" (claim 1) of the present invention. As claim 1 of the present application recites "a secondary electrical load power management system for an aircraft comprising: a plurality of secondary electrical loads..." The generator in the Soucy reference is not an electrical load. Instead, the generator is a mechanical load powered by the engine and the generator's function is actually providing electricity to drive the electrical loads (Soucy, first full paragraph in the section titled Background of the Invention /2. Description of Related Art). Thus Soucy states "FIG. 1, an engine produces mechanical power that is inputted to a generator. For example, the engine may rotate a shaft that is coupled to the generator (possibly through a gearbox or transmission). The generator converts the mechanical power to electrical power that supplies a load. In response to an error between a predetermined engine speed output, and an actual engine output speed as

measured by a speed sensor, a governor provides a command to a fuel supply controller, which controls the supply of fuel to the engine." (column 1, lines 22-31).

The Examiner is not correct in his conclusion that Soucy teaches a controller (fuel supply controller and governor) coupled to the plurality of loads and the sensor to provide a controller coupled to said plurality of secondary electrical loads and to said at least one aircraft flight condition sensor… and operating said plurality of secondary electrical loads (claim 1) of the present invention. The fuel supply controller is coupled to the engine and the governor is coupled to the fuel supply controller. The fuel supply controller and governor in Soucy operate to control the supply of the fuel rather than any electrical load (Soucy, first full paragraph in section titled Background of the Invention / 2. Description of Related Art). (*supra*).

It is the applicant's position that the cited references, when combined, do not teach all the limitations of the present invention.

Therefore, the rejection of the claims under 35 U.S.C. 103(a) over the cited prior art should be withdrawn.

It is still contended that contrary to the Examiner's position, Lacy and Soucy are from nonanalogous arts.

In support of this position, attention is called to the very different art classifications to which they are assigned: Lacy US Class 700/295 and Soucy US Class 290/40C. Different class assignments are considered some evidence of nonanalogy or analogy.

Applicants submit that the structure, function, and purpose of the system of Lacy are also clearly different than that of Soucy and the present invention. Lacy would not

have logically commended itself to the inventor's attention in considering the problems solved by the system and methods of claims 1, 11 and 20.

In developing an aircraft secondary electr4ic load controlling system and similar methods thereof, one would clearly not look to a residential electrical system for controlling the amount of power demanded from a fuel cell subsystem. Activating and deactivating controlled appliances to limit the power output of a fuel cell subsystem in a residential setting is substantially different and unrelated to managing power between primary and secondary loads of an aircraft. In the aircraft setting one is maintaining power to the primary loads while limiting power to the secondary loads to maintain flight and maneuverability of the aircraft. In the residential setting one is simply preventing an overload situation on a fuel cell subsystem. Lacy would not be reasonably pertinent to the particular problems solved by the claimed invention. Thus, the Applicants submit that Lacy is nonanalogous art and to use such a reference is improper and far reaching by the Examiner at best.

Furthermore, Applicants acknowledge that limitations from the specification ought not to be read into the claims, however, Applicants submit that the claims ought to be read in light of and in a consistent manner in view of the specification. It would not be consistent with the specification of the present application to interpret the terms "secondary loads" as associated with an aircraft as an electrical load within a residential circuit. Besides, Lacy does not distinguish between primary and secondary loads nor does the circuit of Lacy operate as the claimed system and methods.

Moreover, there is no motivation or suggestion provided in the references or put forward for the combination and modification of the stated references as is required to

arrive at the present invention. See *in re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Simply put, Soucy does not provide any pertinent teachings and Lacy is nonanalogous art and is unrelated to both Soucy and the claimed invention. Applicants are unsure how the stated references would be combined and what would be achieved by such combination.

Referring to MPEP 706.02(j) and 2143, to establish a *prima facie* case of obviousness, the prior art references must teach or suggest all the claim limitations. Since, both Soucy and Lacy fail to teach or suggest alone or in combination each and every element of claims 1, 11 and 20, they are novel, nonobvious, and are in condition for allowance. Since claims 3-6, 8-10 and 12-19 depend from claims 1 and 11, they too are novel, nonobvious, and are in a condition for allowance for at least the same reasons.

Neither Soucy and/or Lacy teach nor suggest the invention as claimed in the independent claims 1, 11 and 20. The dependent claims which merely add preferred feature(s) to the independent claims likewise are not taught or suggested by the cited references.

Thus dependent claim 3 is directed to the embodiment wherein the aircraft's direct power secondary loads are at least one generator or pump, but this is in the system of claim 1. The aircraft power management system of claim 1 can not be discerned from the Lacy and/or Soucy references.

The same is true with respect to dependent claims 4, 5, 6, 8, 9 and 10. In the absence of a teaching of the basic inventive concept, even if a preferred feature were shown in the references, there would still be a failure to disclose or suggest the claimed invention.

Claims 11 and 20 are method claims and rely for operation on all of the elements of the independent claim 11 (which corresponds to claim 1) and these, not being shown or suggested by the two references similarly to the system claims, are patentable to the applicants.

Claim 20 (independent) in the omission of language contained in claims 1 and 11 and derived from cancelled claims 2 and 7 is not shown or suggested by the combination of references (see above).

SUMMARY

In summary, it is the applicant's position that the cited references, when combined, do not teach all the limitations of the present invention.

Therefore, the rejection of claims 1, 3-6, and 8-20 under 35 U.S.C. 103(a) over the cited prior art should be withdrawn.

It is submitted that there is no *prima facie* evidence for obviousness and the allowance of the claims in the present invention is respectfully requested.

Respectfully submitted,

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